ICN™

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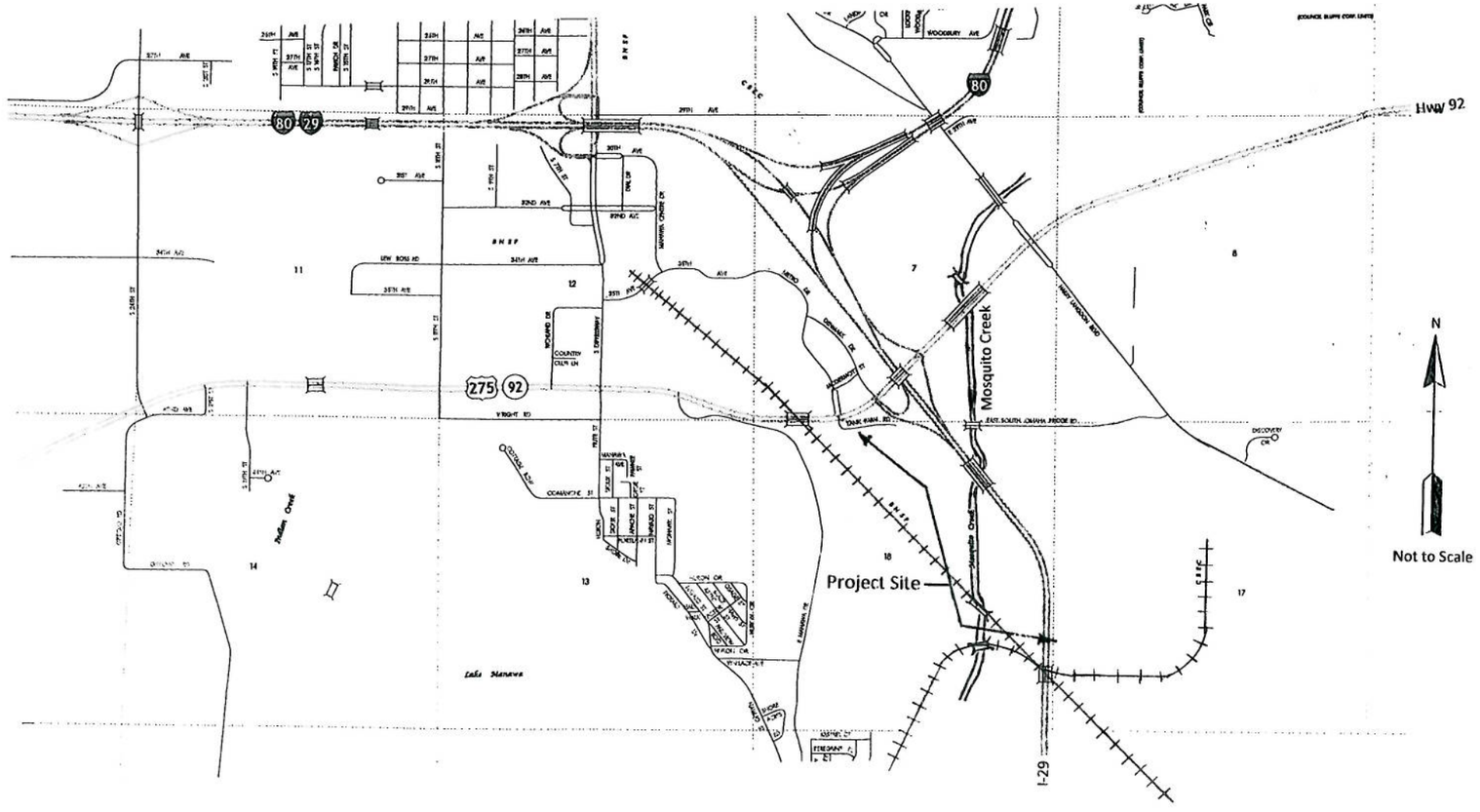
Pottawattamie County
I-29 Relocation
Council Bluffs, IA

ICN Project #78120301



Iowa Communications Network (ICN)
Project #78120301 Pottawattamie County
I-29 Relocation, Council Bluffs, Iowa

General Notes/Construction Notes:

Pick up ICN supplied materials from the Wallace Bldg warehouse in Des Moines, IA.
(SE corner of Des Moines St. & Penn Ave.)
Call Larry Klawitter to schedule pick up. (515) 725-4741 desk, (515) 229-4652 cell
Iowa Communications Network (ICN)
400 E. 14th Street Grimes State Office Bldg
Des Moines, IA 50319

All traffic control shall be performed in accordance with Section 2528-Traffic Control of the Iowa DOT's Standard Specifications for Highway and Bridge Construction, the manual of Uniform Traffic Control Devices, and the Iowa Supplemental Manual on Uniform Traffic Control Devices.

Directional bore approximately 1410' of 2" HDPE duct (SDR 11), 30' minimum below Mosquito Creek flow line, per ICN Dwgs 8, 9, & 10.
Provide 2" HDPE duct (SDR 11).
Directional bore must meet Army Corps of Engineers specifications & standards.
Fluid pressure – No more than 80 psi. Mud pressure – 20 psi minimum. See more detail on ICN Dwg 10.
Grout bore hole with bentonite/cement mixture after 2" HDPE SDR 11 is placed.
Vacuum excess fluids and haul away from the project.

Directional bore 290' of 2" HDPE duct (SDR 11) northwesterly along the westerly R/W of I-29 from Sta. 6646+20. ICN Dwg 8. Duct shall be bored 3'- 4' deep until it exits the Levee Critical Area of Mosquito Creek. Duct will end 15' outside the critical area.
Grout bore hole with bentonite/cement mixture after 2" HDPE SDR 11 is placed.
Vacuum excess fluids and haul away from the project.

Directional bore 325' of 2" HDPE duct (SDR 11) southeasterly along the westerly R/W of I-29 from Sta. 6660+30. ICN Dwg 9. Duct shall be bored 3'- 4' deep until it exits the Levee Critical Area of Mosquito Creek. Duct will end 15' outside the critical area.
Grout bore hole with bentonite/cement mixture after 2" HDPE SDR 11 is placed.
Vacuum excess fluids and haul away from the project.

Excavate bore pits at the ends of the directional bores to a 3' depth. Cut off excess 2" HDPE duct (SDR 11) and connect together with mechanical connectors. Backfill bore pits. Backfilling shall follow Specification Section 02223-Backfilling.

Directional bore 2" HDPE duct (SDR 13.5) under I-29 at Sta. 6673+00 per ICN Dwgs 11 & 12.
Provide 2" HDPE duct. (SDR 13.5)

Maximum and Minimum Allowable Pressures

According to the geotechnical report, the Delft Equation was used to determine the maximum allowable drilling fluid pressures for the proposed horizontal directional drilling. The maximum allowable pressures based on depth are outlined in the geotechnical report Tables 1 and 2. The measured mud pressure should be no more than one-half of the calculated maximum pressure as measured no further than 20-feet behind the drill bit. These measured mud pressures and depths are shown on the Construction Profile, Sheet 10 of 12. The minimum recommended mud pressure when drilling (to prevent borehole collapse) should be approximately 1/2 psi per foot of depth of overburden above the duct. The minimum mud pressure is also shown on the Construction Profile sheet.

Grouting Procedures and Mix Design

In accordance with the geotechnical report, the HDD borehole annulus shall grouted either the full length of the borehole or at least to a distance of 20 feet vertically (depth) and at least 100 feet laterally from the entry and exit pits. The grout will be a stabilized non-shrink cement-bentonite grout with a 28 day compressive strength of at least 100 psi. The cement for grout should be Expansive Hydraulic Cement (ASTM C845 – 04).

IOWA COMMUNICATIONS NETWORK
400 EAST 14TH STREET, GRIMES STATE OFFICE BUILDING, DES MOINES, IOWA 50319

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CALL ONE CALL BEFORE EXCAVATION (1-800-292-8989)

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2		
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8		

SCALE: SITE:

I-29 Relocation
Council Bluffs

DWG: 2 OF 12

General Notes/Construction Notes:

Directional bore 2" HDPE duct (SDR 13.5) under ditch at Sta. 6674+25 per ICN Dwg 11.
Provide 2" HDPE duct. (SDR 13.5)

Vibrate Plow the new direct bury 36f armored cable (36" deep min.), from the beginning of the project at Tank Farm Road to the beginning of the 2, 025' directional bore area at Mosquito Creek.

Pull the new ICN 36f armored cable through the 2, 025' 2" HDPE duct area at Mosquito Creek. Figure Eight cable as necessary. Ends of duct must be sealed with Simplex . Ends of duct must be buried 3' deep minimum, with existing clay soil, and compacted to 95% compaction. Backfilling shall follow Specification Section 02223-Backfilling.

Vibrate Plow the new direct bury 36f armored cable (36" deep min.), from the southerly end of the 2,025' directional bore area to the open trench area at Sta. 6671+15.

Open trench 60' over (2) gas lines at Sta. 6671+15. Place new cable in 2" HDPE (13.5)
Backfill open trench. Backfilling and trenching shall follow Specification Sections 02223-Backfilling and 02225-Trenching respectively.

Vibrate Plow the new direct bury 36f armored cable (36" deep min.), from open trench area to the directional bore at Sta. 6673+00. Figure Eight cable as necessary. Pull the new ICN 36f armored cable through the 2" HDPE duct at Sta. 6673+00. Pull the new ICN 36f armored cable through the 2" HDPE duct under the ditch at Sta. 6674+25. Ends of duct must be buried 3' deep minimum, with existing clay soil. Backfilling shall follow Specification Section 02223-Backfilling.

Vibrate Plow the new direct bury 36f armored cable (36" deep min.), from the end of the directional bore at Sta. 6674+25 to the open trench area at Sta. 6687+25.

Open trench 20' over (1) gas line at Sta. 6687+25. Place new cable in 2" HDPE (13.5)
Backfill open trench. Backfilling shall follow Specification Section 02223-Backfilling.

Vibrate Plow the new direct bury 36f armored cable (36" deep min.), from open trench to the end of the relocation project at Sta. 6688+60.

Place an ICN provided handhole. (24"x36"x30") (gravel/screen base) 20k lid at Sta. 6688+60.
Lid at grade.

Coil 75' of new cable at new handhole at Sta. 6688+60.

Expose 50' of existing ICN cable at south end of the project.

Backfill per Specification Section 02223-Backfilling all excavated areas after splicing.
Restore R/W to pre-construction condition.

Splicing:

No splicing in this bid.
ICN has a splicer on board who has completed splicing for ICN & Iowa DOT in the Council Bluffs traffic monitoring areas.
ICN will provide all the splice materials needed to connect the new ICN relocation.

Abandonment of existing utility:
The existing ICN fiber optic cable is buried on the easterly side of existing I-29, contained in a 1.25" HDPE duct under Mosquito Creek. A contractor with grouting experience will be hired to pump grout into the 1.25" HDPE duct. A solid pipe/tube will be inserted into the duct on each side of Mosquito Creek. A bentonite/cement mixture will be pumped into the duct until grout material exists back out towards the pumping sites. This activity will take place once the new fiber optic cable is placed and activated, leaving the existing/original ICN cable dead.

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1			SCALE: SHEET
2			
3			I-29 Relocation
4			Council Bluffs
5			
6			
7			DWG 3 OF 12
8			

Quantities

Item Description	Quantity	Unit	
Directional bore 2" HDPE (SDR 11)	2,025	LF	(contractor provides duct)
Directional bore 2" HDPE (SDR 13.5)	530	LF	(contractor provides duct)
Pull 36f armored cable through 2" duct	2,555	LF	
Direct plow (no duct) 36f armored cable Provide & place fiber optic warning tape 18" above new cable	3,905	LF	
Open trench over gas lines	80	LF	(contractor provides duct)
Expose existing ICN cable	50	LF	
Connect 2" duct sections together	3	EA	
Excavate bore pit	7	EA	
Place 24"x36"x30" handhole	1	EA	
Place ICN marker post/sign	9	EA	
Enter existing IDOT ITS handhole	1	EA	

Pump grout into new bore hole under Mosquito Creek. See Dwg 2 of 12

Pump grout into existing 1.25" duct on east side of I-29. See Dwg 3 of 12

95% Compaction Testing at Mosquito Creek Bore only. All bore holes and bore pits

ICN will provide the following:

Reel of 36f armored cable, 7,200'.
24"x36"x30" handhole w/ 20K lid.
18" locate pedestal. Ground rod w/ clamp.
(9) ICN marker posts/signs.

IOWA COMMUNICATIONS NETWORK
400 EAST 14TH STREET, GRIMES STATE OFFICE BUILDING, DES MOINES, IOWA 50319

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1			SCALE: SITE
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3			I-29 Relocation Council Bluffs
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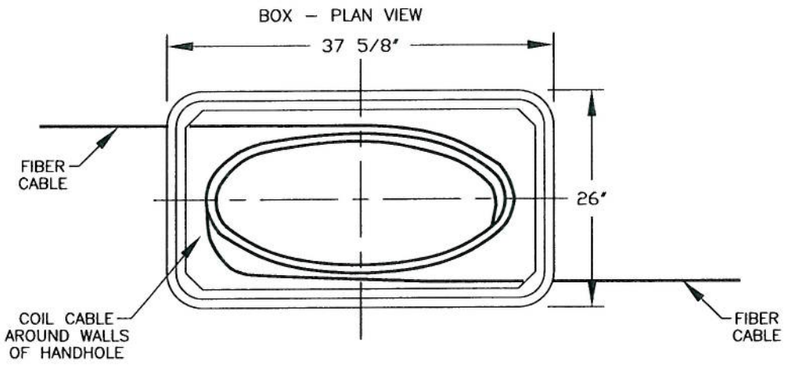
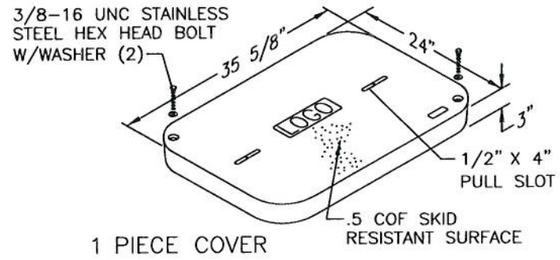
8			DWG 4 OF 12

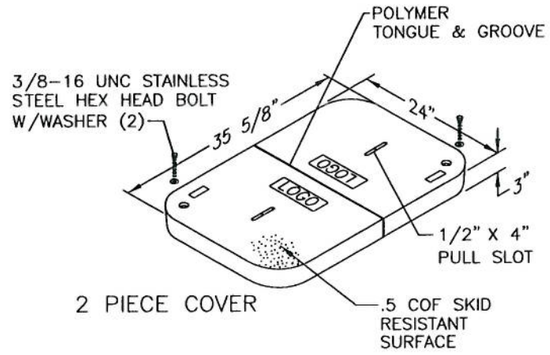
HANDHOLE TYPICAL

24" x 36" Handhole Assembly

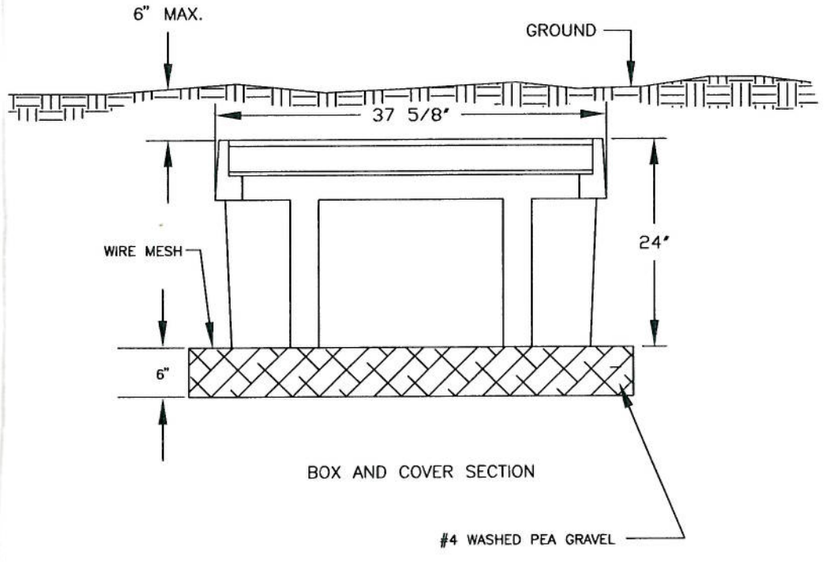




1 PIECE COVER

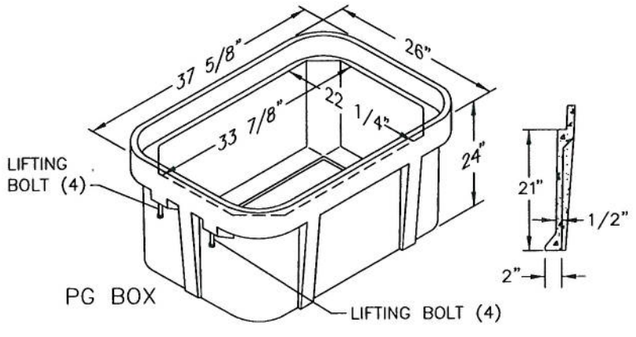


2 PIECE COVER

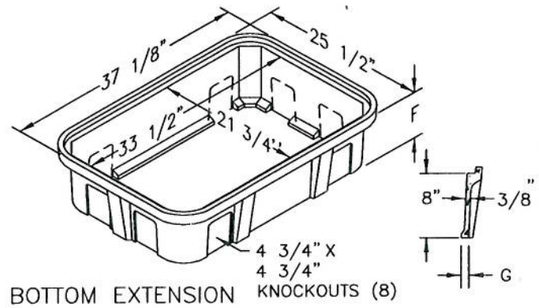


BOX AND COVER SECTION

#4 WASHED PEA GRAVEL



PG BOX



BOTTOM EXTENSION

1. ALL HANDHOLES SHALL BE MADE RODENT PROOF.
2. COIL FIBER CABLE IN HANDHOLE ENSURING THAT THE BEND RADIUS IS NOT LESS THAN 20 TIMES THE DIAMETER OF THE CABLE.

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SCALE: SIZE:

I-29 Relocation
Council Bluffs

DWG: 5 OF 12

LEWIS TWP.
T-74N R-43W

DENMARK DR.

80120

80115

METRO DR.

US 275

TRAFFIC SIGNAL

EXISTING BURIED VAULT

CABINET

POLE

EXISTING CONTROL CABINET

CULVERT

SEC. 7

SEC. 18

PLOW 4' OFF OF FENCE, OR 4' OFF EXISTING UTILITY IF ACTIVE. 36" DEEP (36F CABLE DIRECT BURY, NO DUCT).

REMOVE EXISTING SILT FENCE AS NEEDED.

EXISTING R.O.W.

MANEUVER THROUGH EXISTING UTILITIES.

TANK FARM RD.

N

(REMOVE)

NEW US 275 LOOP B

NEW US 275 RAMP D

(REMOVE)

PLOW 4' OFF OF FENCE, OR 4' OFF EXISTING UTILITY IF ACTIVE. 36" DEEP (36F CABLE DIRECT BURY, NO DUCT).

TANK FARM RD.

MATCH LINE SEE DWG 7

ENTER EXISTING BURIED VAULT. (LID @ GRADE)
PULL THE NEW 36F ARMORED CABLE THROUGH
THE EXISTING 3" DUCT INTO THE EXISTING CONTROL CABINET.
COIL 25' OF NEW CABLE.

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GRIMES STATE OFFICE BUILDING
400 EAST 14TH STREET
DES MOINES, IOWA 50319

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I-29 RELOCATION
COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING

DWG 6 OF 12 | SCALE: 1"=50' | SIZE: 11 x 17

1	PERMIT	4-23-12			
2	DWG. REVISED	12-12-13			
3	DWG. REVISED	12-16-13			
	DWG. REVISED	1-7-14			

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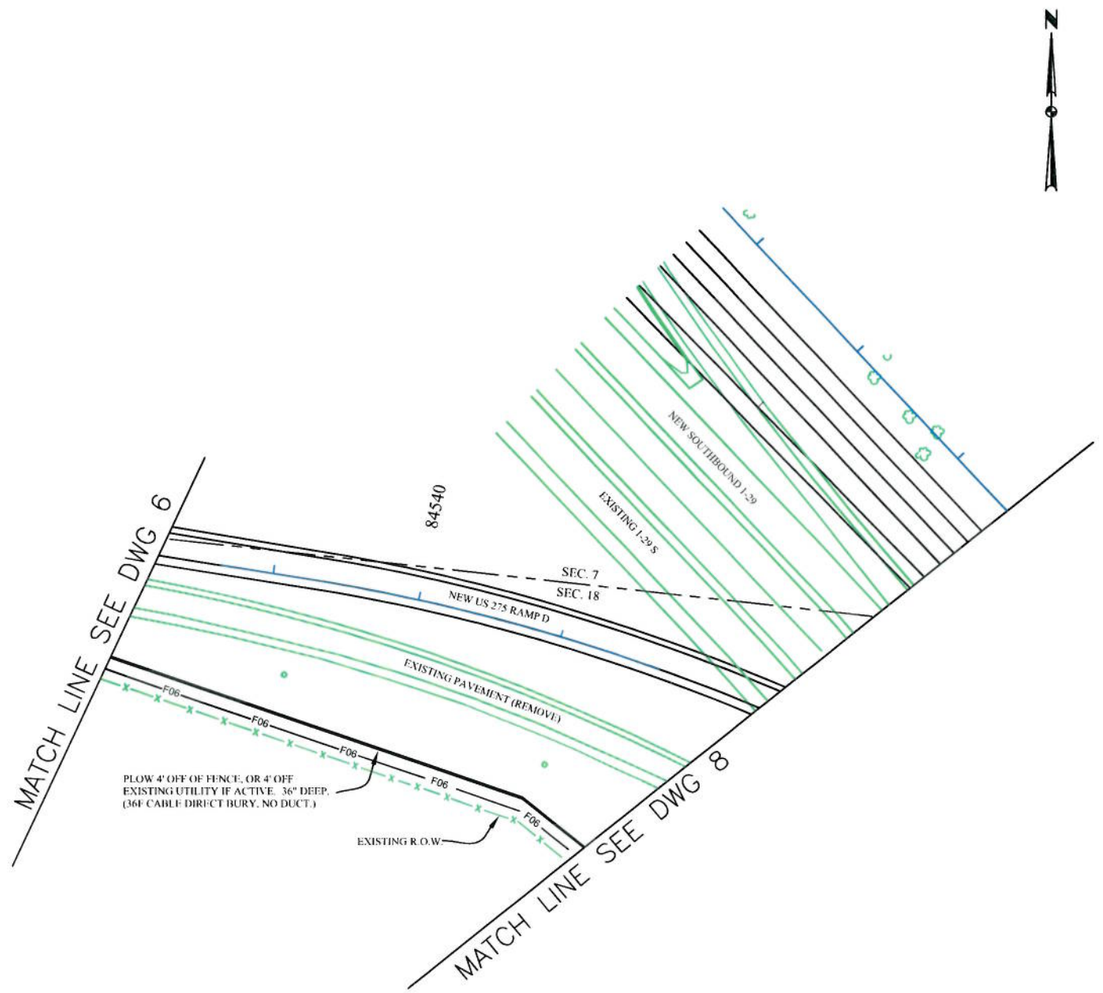
LEWIS TWP.
T-74N R-43W



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I-29 RELOCATION
COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING

DWG 7 OF 12 | SCALE: 1"=50' | SIZE: 11 x 17

1	PERMIT	4-23-12
2	DWG. REVISED	12-12-13
3	DWG. REVISED	12-16-13

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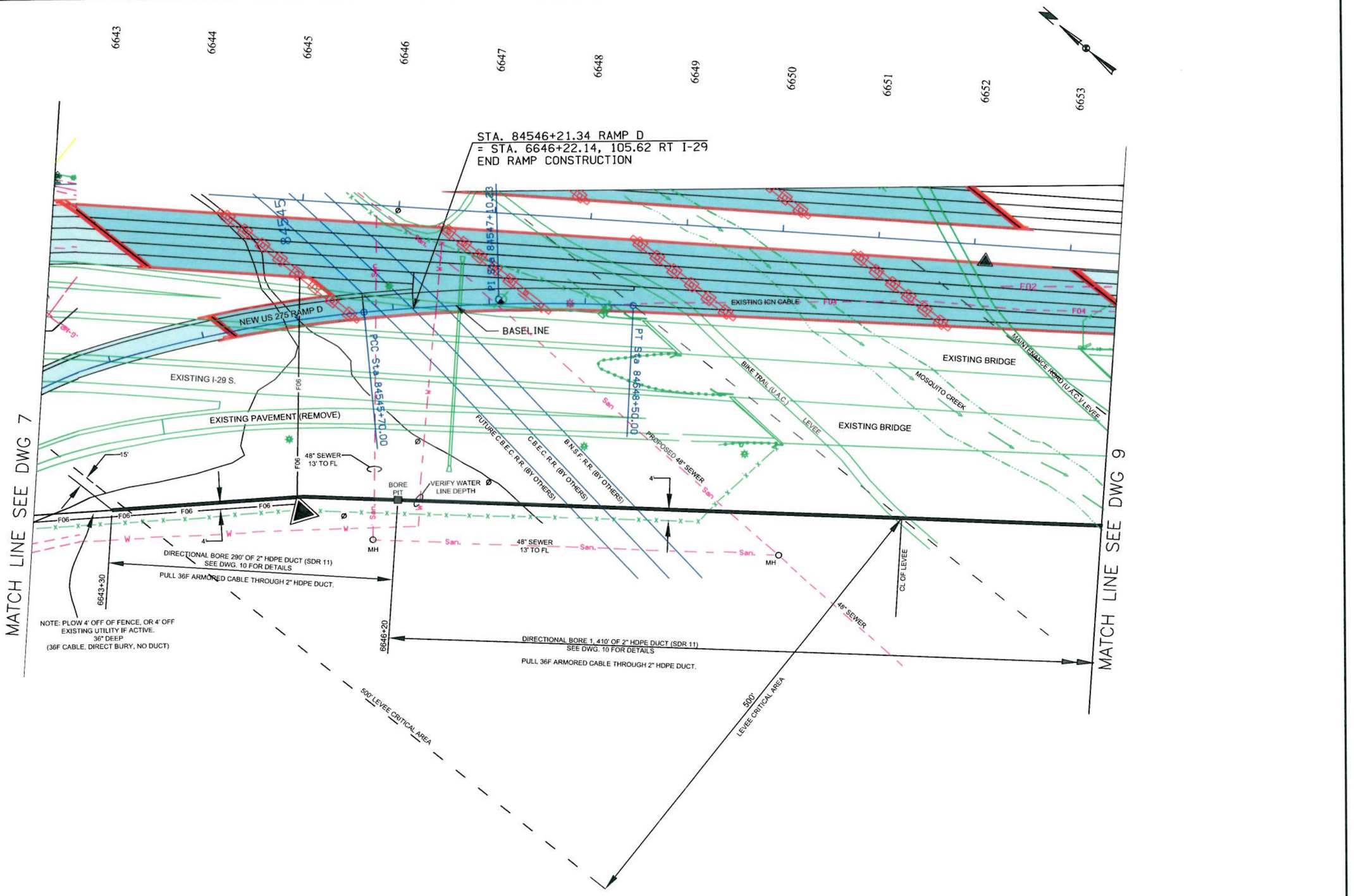

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I-29 RELOCATION
COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING
DWG 8 OF 12 | SCALE: 1"=100' | SIZE: 11 x 17

1	PERMIT	4-23-12	5	DWG. REVISED	10-14-13
2	DWG. REVISED	5-21-12			
3	DWG. REVISED	6-5-13			
4	DWG. REVISED	9-30-13			

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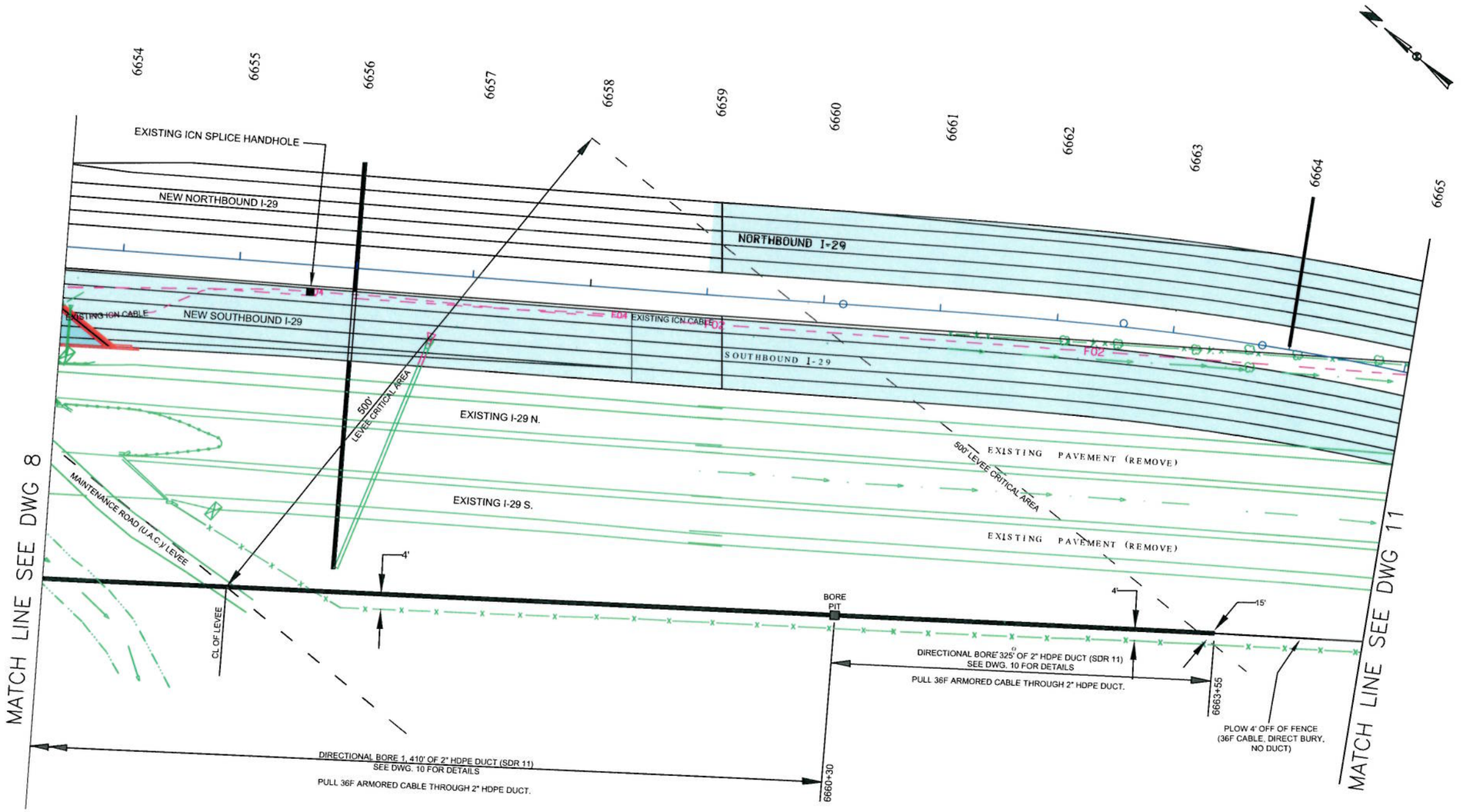

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COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING

DWG 9 OF 12 | SCALE: 1"=100' | SIZE: 11 x 17

1	PERMIT	4-23-12	5	DWG. REVISED	10-14-13
2	DWG. REVISED	5-21-12	6	DWG. REVISED	10-24-13
3	DWG. REVISED	6-5-13			
4	DWG. REVISED	9-30-13			

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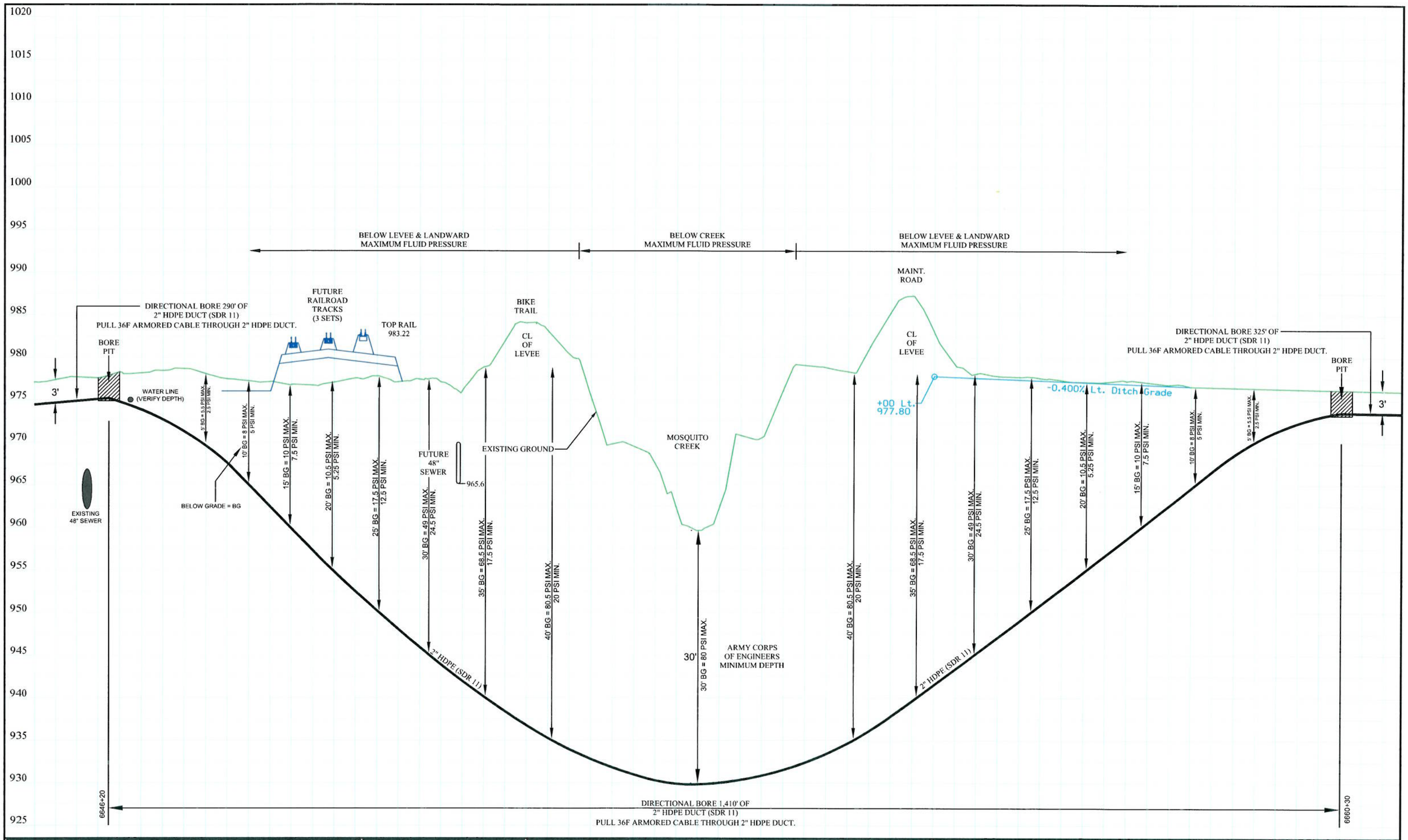

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I-29 RELOCATION
COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING

DWG 10 OF 12 | SCALE: 1"=100' | SIZE: 11 x 17

1	PERMIT	4-23-12	5	DWG REVISED	10-14-13
2	DWG REVISED	5-21-12	6	DWG REVISED	10-24-13
3	DWG REVISED	6-5-13			
4	DWG REVISED	9-30-13			

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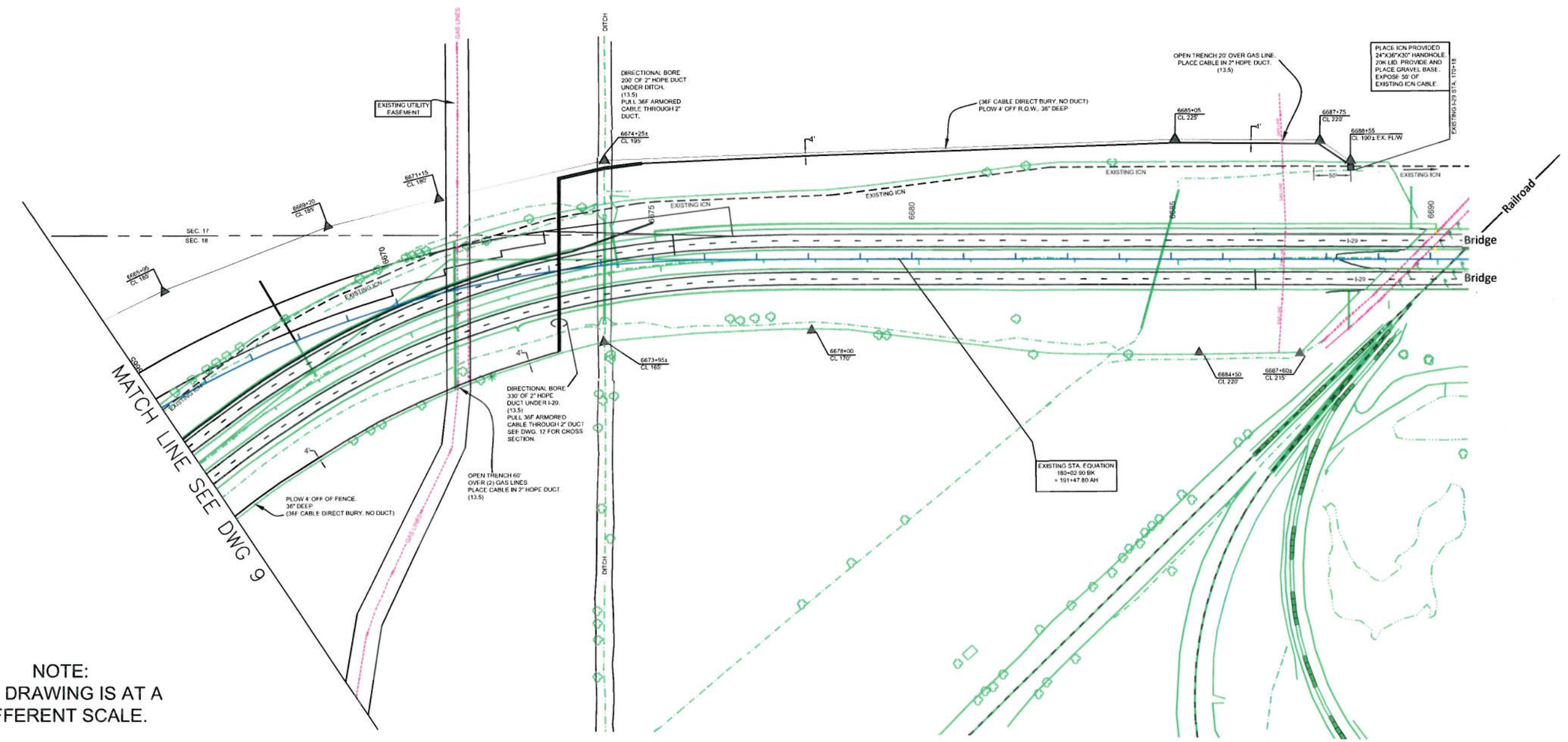
LEWIS TWP.
T-74N R-43W



NOTE:
THIS DRAWING IS AT A DIFFERENT SCALE.

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I-29 RELOCATION
COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING

DWG 11 OF 12 | SCALE: | SIZE: 11 x 17

1	PERMIT	4-23-12
2	DWG. REVISED	12-13-13
3	DWG. REVISED	12-16-13

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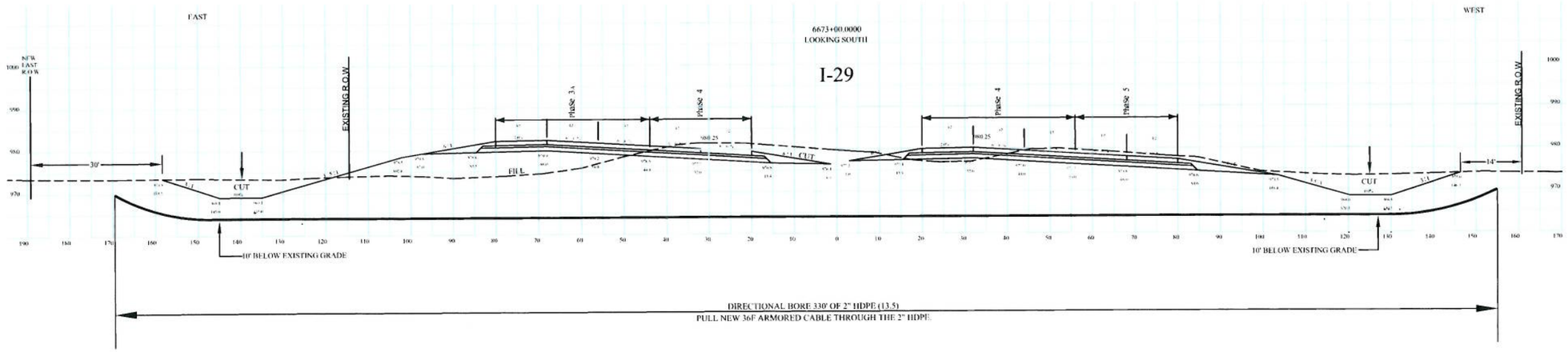

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I-29 RELOCATION
COUNCIL BLUFFS, IA
MOSQUITO CREEK CROSSING

DWG 12 OF 12 | SCALE: | SIZE: 11 x 17

1	PERMIT	4-23-12
2	DWG. REVISED	12-13-13
3	DWG. REVISED	12-16-13

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